



CAN/CSA-P.4.1-15

National Standard of Canada

(reaffirmed 2020)



Testing method for measuring annual fireplace efficiency



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Testing method for measuring annual fireplace efficiency



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Preface

This is the third edition of CSA P.4.1, *Testing method for measuring annual fireplace efficiency*. It supersedes the previous editions published in 2009 and 2002.

For the most part, the testing method specified in this Standard is consistent with the test method published in the United States *Code of Federal Regulations*, Title 10, Part 430, Subpart B, Appendix O. Accordingly, this Standard is intended to serve as a stand-alone document that can be referenced by Canadian jurisdictions.

The main changes from the previous edition are as follows:

- a) requirements for side-wall mounted vent terminals have been clarified (see Clause [4.2.2.3](#));
- b) reference to rotating flue gas sampling probe has been removed;
- c) clarification of appliance set-up at its maximum and reduced listed input rates has been added;
- d) reference to “flue” for direct vent appliances has been added (see Clause [5.6](#));
- e) energy input for different pilot technologies used in gas fireplaces has been revised (see Clause [5.7](#));
- f) calculation procedure for on-cycle time constant has been revised for harmonization with ASHRAE 103 (see Clause [6.12](#));
- g) equations for calculating the heating seasonal efficiency have been revised to correct an anomaly (see Clauses [6.21.1](#) and [6.21.2](#));
- h) Annex [A](#) has been revised to remove regulatory and manufacturers’ marketing literature requirements;
- i) original Annex [E](#) has been deleted and Figure [E.1](#) moved and renumbered to Figure [2B](#); and
- j) original Annex F has been relabelled Annex [E](#).

CSA Group acknowledges that the development of this Standard was made possible, in part, by the financial support of Natural Resources Canada (NRCan), the Ontario Ministry of Energy, Union Gas Limited, the Hearth Patio and Barbecue Association of Canada, and Manitoba Hydro.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was developed by the Subcommittee on Gas Fireplace Efficiency, under the jurisdiction of the Technical Committee on Energy Efficiency and Related Performance of Fuel-Burning Appliances and Equipment and the Strategic Steering Committee on Fuel Burning Equipment, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CAN/CSA-P.4.1-15

Testing method for measuring annual fireplace efficiency

1 Scope

1.1

This Standard provides a method for measuring annual fireplace efficiency.

1.2

This Standard applies to vented gas fireplaces meeting the requirements of ANSI Z21.50/CSA 2.22 and to vented gas fireplace heaters approved to ANSI Z21.88/CSA 2.33 that use natural gas or propane.

1.3

This Standard does not apply to decorative fireplaces meeting the requirements of ANSI Z21.60/CSA 2.26.

1.4

This Standard includes

- a) a test method for cyclic and part-load performance;
- b) methods for interpolating and extrapolating test data; and
- c) calculation procedures for establishing seasonal performance.

1.5

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.6

The values given in SI (metric) are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.